
Contribution ID: **29** Type: **Oral presentation**

# Measurement of the EDM of the muon and betadecaying nucleis using the frozen-spin technique in a compact stroage trap

*Thursday 11 September 2025 16:00 (20 minutes)*

Electric dipole moments (EDM) of fundamental particles inherently violate the combined symmetry of charge-conjugation and parity inversion (CP) .
At PSI we plan to measure the EDM of the muon using the frozen-spin technique within a compact storage trap. This method exploits the high effective electric field, E = 165 MV/m, experienced in the muon's rest frame with a momentum of about 23 MeV/c when passing through a solenoidal magnetic field of B=2.5 T. The same trap may be exploited for a first measurement of the EDM of Li8,providing an indirect measurement of the proton EDM.

The poster will outline fundamental considerations for a muon and a Li8 EDM search and present an overview of the demonstration experiment bein mounted at a secondary muon beamline of the Paul Scherrer Institute.

In an initial phase the expected sensitivity to a muon EDM is 4E-21 ecm, assuming 200 days of data.
In a subsequent phase, Phase 2, we propose to improve the sensitivity to 6E-23 ecm using a dedicated instrument installed on a different beamline that produces muons of momentum 125 MeV/c.
The search for the Li8 EDM could be conducted at the VITO beamline of ISOLDE, CERN.

**Author:** SCHMIDT-WELLENBURG, Philipp (PSI - Paul Scherrer Institut)

**Presenter:** SCHMIDT-WELLENBURG, Philipp (PSI - Paul Scherrer Institut)

**Session Classification:** Session